

What is claimed is:

1. An attaching structural unit used for installing a quadrangular solar-battery module onto a slanted roof: comprising
 - a module frame attached to the solar-battery module;
- 5 the module frame comprising a pair of first and second elongated frame elements opposed to each other and another pair of third and fourth elongated frame elements opposed to each other,
 - wherein each of the third and fourth frame elements respectively includes a water-leakage preventive edges protruding
- 10 outward and extending longitudinally from each of the frame elements.
2. The attaching structural unit of claim 1, wherein
 - the first frame element is a front-side frame element placed in the direction of an eaves side of the roof;
 - the second frame element is a rear-side frame element placed in
- 15 the direction of a ridge side of the roof;
- the third frame element is a left-side frame element placed in the direction of a left side with respect to the slope of the roof; and
- the fourth frame element is a right-side frame element placed in the direction of a right side with respect to the slope of the roof, and
- 20 in the state that the module frame is attached the solar-battery module to form a module unit and a plurality of the module units are placed on the roof adjacent to one another or adjacent to roof-forming members ;
- the rear-side frame element in one module unit is placed under
- 25 the front-side frame element of another module unit or under a

roof-forming member adjacent to said one module unit in an overlapped manner,

the water-leakage preventive edge in the left-side frame element in one module unit is under or on the water-leakage preventive edge in 5 the right-side frame element of another module unit or the right-side end in a roof-forming member adjacent to said one module unit in an overlapped manner, and

the water-leakage preventive edge in the right-side frame element in one module unit is on or under the water-leakage preventive 10 edge in the left-side frame element of another module unit or the left-side end in a roof-forming member adjacent to said one module unit in an overlapped manner.

3. The attaching structural unit of claim 2, wherein the front-side frame element has a front hook on its lower surface, and the 15 rear-side frame element has a rear hook on its upper surface which can be engaged with the front hook in another module unit.

4. The attaching structural unit of claim 3, wherein a securing member for securing the module frame onto a beam on the roof is further provided and the rear-side frame is further provided with a 20 protruding hook that protrudes forward on its lower surface,

the securing member being provided with a plurality of securing metal tools, a front securing tool that can be engaged with the front hook in the front-side frame element, and a rear securing tool that can be engaged with the protruding hook in the rear-side frame element,

25 the front securing tool being provided with hole sections

through which the securing metal tools are inserted, so that the front securing tool is secured to the beam of the roof through the roof-forming member, and

the rear securing tool being provided with hole sections through 5 which the securing metal tools are inserted, and being placed on the beam in an engaged state with the protruding hook of the rear-side frame element.

5. The attaching structural unit of claim 1, wherein the first frame element, second frame element, third frame element and fourth 10 frame element are divided respectively, and are connected and assembled with small screws.

6. The attaching structural unit of claim 3, wherein the front hook is detachably attached to the front-side frame element from its front side by using small screws.

15 7. The attaching structural unit of claim 2, wherein the module frame is further provided with a decorative cover that is detachably attached to the front-side frame element.

8. The attaching structural unit of claim 1, wherein the module frame is further provided with a reinforcing member which is placed on 20 the back face of the solar-battery module so as to connect the first frame element and the second frame element.

9. The attaching structural unit of claim 4, wherein the rear securing tool is formed to have a length shorter than the rear-side frame element.

25 10. The attaching structural unit of claim 1, wherein the module

frame is further provided with a foamed resin member that is incorporated in a gap between the module frame and the solar-battery module.

11. A module unit, comprising a quadrangular solar-battery module and a module frame in the attaching structural unit of claim 1, to be attached to the solar-battery module.

5 12. The module unit of claim 11, which is provided with a back film with metal foil bonded to the rear surface of the solar-battery module.

10 13. A solar-battery structural unit, comprising:
a quadrangular solar-battery module;
a module frame to be attached to the solar-battery module to form a module unit; and
a securing member used for securing the module unit on a

15 beam on a roof, wherein
the module frame is provided with:
a front-side elongated frame element to be placed in the direction of an eaves of a slanted roof;
a rear-side elongated frame element to be placed in the direction of a ridge of the roof;
20 a left-side elongated frame element to be placed in the direction of a left side with respect to the slope of the roof which has a water-leakage preventive edge protruding outward and extending longitudinally from the frame element ; and
25 a right-side elongated frame element to be placed in the

direction of a right side with respect to the slope of the roof which has a water-leakage preventive edge protruding outward and extending longitudinally from the frame element,

the front-side frame element being provided with a front hook

5 on its lower surface, and

the rear-side frame element being provided with a rear hook placed on its upper surface and located on the front hook of the front-side frame element of another module frame and engaged therewith in the front-to-rear direction, and a protruding hook

10 protruding forward on the lower surface, and

the left-side frame element and right-side frame element being respectively provided with a water-leakage preventive edge protruding outward and extending longitudinally from frame element, and

the securing member including a plurality of securing metal

15 tools, a front securing tool for engaging with the front hook of the module frame in the front-to-rear direction, and a rear securing tool for engaging with the protruding hook of the module frame in the front-to-rear direction, and

the front securing tool including hole sections through which

20 the securing metal tools are inserted, so that the front securing tool is secured to the beam of the roof through the roof-forming member, and

the rear securing tool having hole sections through which the securing metal tools are inserted which is placed on the beam in an engaged state with the protruding hook of the rear-side frame element,

25 and

in the state that the module frame is attached the solar-battery module to form a module unit and a plurality the module units are placed on a roof adjacent to one another or adjacent to roof-forming members;

5 the rear-side frame element in one module unit being placed under the front-side frame element of another module unit or a roof-forming member adjacent to said one module unit in an overlapped manner,

the water-leakage preventive edge in the left-side frame element
10 in one module unit being under or on the water-leakage preventive edge in the right-side frame element of another module unit or a right-side end in the roof-forming member in an overlapped manner, and

the water-leakage preventive edge in the right-side frame element in one module unit being on or under the water-leakage
15 preventive edge in the left-side frame element of another module unit or a left-side end in the roof-forming member in an overlapped manner.

14. An attaching method for the solar-battery structural unit of claim 13, comprising the steps of:

securing the front securing tool to the beam of the roof from
20 above the roof-forming member with the securing metal tools;
engaging the rear securing tool with the protruding hook of the rear-side frame element,
engaging the front hook of the front-side frame element with the front securing tool, and
25 placing the rear securing tool on the beam of the roof, and

securing thereon with the securing metal tools.

15. The attaching method of claim 14, wherein, in case where the module units are placed on a roof with a plurality of rows in the front-to-rear direction,

5 the protruding hook of the rear-side frame element in the module unit to be located in the direction of the ridge of the roof is engaged with the rear securing tool, the front hook of the front-side frame element in the same module unit is also engaged with the rear hook of the rear-side frame element in a module unit to be adjacent to
10 the above module unit, and the above rear securing tool is placed on the beam of the roof and secured with the securing metal tools.

16. A removing method for a module unit attached on a roof by using the attaching method of claim 15 which comprises the steps of:

removing the front hook of the front-side frame element in a
15 module unit to be exchanged,

pushing the module unit up toward so that at least the protruding hook of the rear-side frame element is separated from the rear securing tool, and

raising the front end of a module unit or roof-forming member
20 adjacent to the above module unit, thereby detaching the module unit to be exchanged from the roof.

17. The removing method of claim 16 in which the front hook is detachably attached to the front-side frame element, and a module unit to be newly used is beforehand detached on its front hook, which is
25 followed by inserting the new module unit into the position of removed

module unit, engaging the protruding hook of the new module unit on the rear securing tool, re-attaching the front hook which is beforehand detached to the new module unit, and engaging the front hook with the front securing tool or the rear hook of the adjacent module unit.